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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,167	11/13/2003	Stephen W. Magner	203-0359 (81090529) (FGT)	2254
36865	7590	10/18/2004	EXAMINER CHANG, CHING	
KOLISCH HARTWELL, PC 200 PACIFIC BUILDING 520 SW YAMHILL STREET PORTLAND, OR 97204			ART UNIT 3748	PAPER NUMBER

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/714,167	Applicant(s) MAGNER ET AL.	
	Examiner Ching Chang	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/13/2003</u> . | 6) <input type="checkbox"/> Other: ____ |

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DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1(a). Claim 17 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 15 of copending Application No. 10/714, 682.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the instant application lacks the limitation of "and further based on sensor or actuator degradation, is broader than that of claim 15 of the copending Application '682 .

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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1(b). Claim 17 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 16 of copending Application No. 10/714, 682.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the instant application lacks the limitations of “the engine having a variable compression ratio mechanism”, “and compression based on sensor or actuator degradation”, and “code for adjusting said selected one ...and compression ratio”, is broader than that of claim 16 of the copending Application ‘682 .

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. ***Claims 1-5, and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al. (US Patent 6,230,675).***

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Kobayashi discloses a method for controlling valve operation of valves (2, 4) coupled to a cylinder of an internal combustion engine with a piston (8), the method comprising: indicating potential interference between the piston and the valve (See Figs. 12-13); selecting at least one of valve timing and valve lift based on a direction of valve timing change and valve lift change (through control unit U); and in response to said indication, limiting said selected one of valve timing and valve lift to reduce said potential for interference (See Col. 7, line 22 through Col. 10, line 32); wherein said indication of potential interference is an indication of operation at conditions where clearance between a piston and an intake valve (2) is below a threshold value when the piston is at a top dead center position (See Fig. 13); wherein said indication of potential interference is based on current operating conditions; wherein said current operating conditions include cam timing (through control unit 6); wherein said current operating conditions include valve lift (through control unit 5); wherein said selecting is based on whether at least one of valve timing and valve lift are changing in a direction that reduces potential clearance; wherein said limiting said selected one of valve timing and valve lift includes limiting position of travel to a selected range (B in Fig. 5); wherein said limiting said selected one of valve timing and valve lift includes limiting position of travel to a maximum value (See Col. 3, line 59 through Col. 7, line 21).

4. ***Claims 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al. (US Patent 6,230,675).***

Kobayashi discloses a computer storage medium (within control unit U) having instructions (See Col. 7, line 22 through Col. 10, line 32) encoded therein for controlling

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valve operation of valves (2, 4) coupled to cylinder of an internal combustion engine with a piston (8), the engine in a powertrain in a vehicle on the road, said medium comprising: code for indicating potential interference between the piston and the valve (See Figs. 12-13); code (See Figs. 8-9) for selecting at least one of valve timing (through control unit 6) and valve lift (through control unit 5) based on a direction of valve timing change and valve lift change; and code (through steps 19-24) for adjusting said selected one of valve timing and valve lift to reduce said potential for interference response to said indication; wherein said code for adjusting said selected one further comprises code limiting a position of said selected one of valve timing and valve lift; wherein said code for adjusting said selected one further comprises code for limiting a position and rate of change of said selected one of valve timing and valve lift; wherein said code for adjusting said selected one further comprises adjusting both said valve timing and valve lift; wherein said code for adjusting is carried out during engine operation.

5. Claims 1-6, 8-10, and 11-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamura et al. (US Patent 6,575,128).

Nakamura discloses a method for controlling valve operation of valves (12) coupled to a cylinder of an internal combustion engine (See Fig. 1) with a piston, the method (See Col. 5, line 45 through Col. 12, line 37; Col. 14, line 1 through Col. 19, line 32) comprising: indicating potential interference between the piston and the valve based on engine valve timing, valve lift, and compression ratio (See Figs. 8, 27, 33, 36, 39);

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selecting at least one of valve timing and valve lift (See Figs. 7 and 19) based on a direction (through ECU 37) of valve timing change (through 2) and valve lift change (through 1); and in response to said indication, limiting said selected one of valve timing and valve lift to reduce said potential for interference (See Col. 7, line 22 through Col. 10, line 32); wherein said indication of potential interference is an indication of operation at conditions where clearance between a piston and an intake valve (12) is below a threshold value when the piston is at a top dead center position (See Col. 8, line 11 through line 21); wherein said indication of potential interference is based on current operating conditions; wherein said current operating conditions include cam timing (through 2); wherein said current operating conditions include valve lift (through 1); wherein said selecting is based on whether at least one of valve timing and valve lift are changing in a direction that reduces potential clearance; wherein said limiting said selected one of valve timing and valve lift includes limiting position of travel to a selected range (A'-A, Lmin-Lmax); wherein said limiting said selected one of valve timing and valve lift includes limiting position of travel to a maximum value (Lmax); and further comprising adjusting compression ratio based on engine or vehicle operating conditions. (See Col. 8, line 43 through line 51).

6. ***Claims 17-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamura et al. (US Patent 6,575,128).***

Nakamura discloses a computer storage medium (within ECU 37) having instructions (See Col. 8, line 23 through Col. 12, line 37; Col. 14, line 1 through Col. 19, line 32) encoded therein for controlling valve operation of valves (12) coupled to cylinder of an

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internal combustion engine (See Fig. 1) with a piston, the engine in a powertrain in a vehicle on the road, said medium comprising: code for indicating potential interference between the piston and the valve (See Figs. 8, 27, 33, 36, 39); code (See Figs. 9-12, 24, 30, 34, 37) for selecting at least one of valve timing (through 2) and valve lift (through 1) based on a direction of valve timing change and valve lift change; and code (See Figs. 9-12, 24, 30, 34, 37) for adjusting said selected one of valve timing and valve lift to reduce said potential for interference response to said indication; wherein said code for adjusting said selected one further comprises code limiting a position of said selected one of valve timing and valve lift (See Figs. 7, 19); wherein said code for adjusting said selected one further comprises code for limiting a position and rate of change of said selected one of valve timing and valve lift (See Figs 7, 19); wherein said code for adjusting said selected one further comprises adjusting both said valve timing and valve lift; wherein said code for adjusting is carried out during engine operation; wherein said code for adjusting further comprising adjusting each of valve timing, valve lift, and compression ratio; and further comprising code for adjusting engine torque to compensate for said adjusting said selected one (See Col. 8, line 26 through Col. 12, line 24).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. ***Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (as applied to claim 3/1 above) in view of Aoyama et al. (JP '099).***

Kobayashi discloses the invention, however, fails to disclose the current operating condition including a current compression ratio of a variable compression ratio system.

The patent to Aoyama on the other hand, teaches that it is conventional in the engine controller art, to have utilized a variable compression ratio mechanism (See Figs. 1, 6 and 7), to adjust the compression ratio of the current engine operation conditions, in order to avoid an interference (See Fig. 2) between a piston (38) and an intake valve (12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the variation of compression ratio in current engine operating conditions as taught by Aoyama in the Kobayashi method, since the use thereof would provide an improved engine valve control method, in order to avoid an interference between the engine valve and the piston, under various engine operating conditions.

9. ***Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (US Patent 6,230,675) in view of Aoyama et al. (JP '099).***

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Kobayashi discloses a method for controlling valve operation of valves (2, 4) coupled to a cylinder of an internal combustion engine with a piston (8), the method comprising: indicating potential interference between the piston and the valve (See Figs. 12-13); selecting at least one of valve timing and valve lift based on a direction of valve timing change and valve lift change (through control unit U); and in response to said indication, limiting said selected one of valve timing and valve lift to reduce said potential for interference (See Col. 7, line 22 through Col. 10, line 32); wherein said indication of potential interference is an indication of operation at conditions where clearance between a piston and an intake valve (2) is below a threshold value when the piston is at a top dead center position (See Fig. 13); wherein said indication of potential interference is based on current operating conditions; wherein said current operating conditions include cam timing (through control unit 6); wherein said current operating conditions include valve lift (through control unit 5); wherein said selecting is based on whether at least one of valve timing and valve lift are changing in a direction that reduces potential clearance; wherein said limiting said selected one of valve timing and valve lift includes limiting position of travel to a selected range (B in Fig. 5); wherein said limiting said selected one of valve timing and valve lift includes limiting position of travel to a maximum value (See Col. 3, line 59 through Col. 7, line 21).

Kobayashi discloses the invention as recited above, however, fails to disclose further comprising adjusting compression ratio based on engine operating conditions.

The patent to Aoyama on the other hand, teaches that it is conventional in the engine controller art, to have utilized a variable compression ratio mechanism (See

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Figs. 1, 6 and 7), to adjust the compression ratio of the current engine operation conditions in order to avoid the interference (See Fig. 2) between a piston (38) and an intake valve (12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have adjusted the compression ratio in current engine operating conditions as taught by Aoyama in the Kobayashi method, since the use thereof would provide an improved engine valve control method, in order to avoid an interference between the engine valve and the piston, under various engine operating conditions.

10. ***Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (as applied to claim 17 above) in view of Aoyama et al. (JP '099).***

Kobayashi discloses the invention, however, fails to disclose the said code further comprising an adjustment of compression ratio.

The patent to Aoyama on the other hand, teaches that it is conventional in the engine controller art, to have adjusted the compression ratio of the current engine operation conditions in order to avoid an interference (See Fig. 2) between a piston (38) and an intake valve (12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further included the adjustment of compression ratio in current engine operating conditions as taught by Aoyama in the Kobayashi method, since the use thereof would provide an improved engine valve control method, in order to avoid an interference between the engine valve and the piston, under various engine operating conditions.

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11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (as applied to claim 17 above) in view of Nakamura et al. (US Patent 6,575,128).

Kobayashi discloses the invention, however, fails to disclose the said code further comprising an adjustment in engine torque.

The patent to Nakamura on the other hand, teaches that it is conventional in the engine controller art, to have adjusted the torque of the current engine operation conditions (See Col. 8, line 26 through Col. 12, line 24), in order to avoid the interference between a piston and an intake valve (See Fig. 8).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further included the adjustment of torque in current engine operating conditions as taught by Nakamura in the Kobayashi method, since the use thereof would provide an improved engine valve control method, in order to avoid an interference between the engine valve and the piston, under various engine operating conditions.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (as applied to claim 6/3/1 above) in view of Aoyama et al. (JP '099).

Nakamura discloses the invention, however, fails to disclose the said compression ratio being a current compression ratio value of a variable compression ratio system.

The patent to Aoyama on the other hand, teaches that it is conventional in the engine controller art, to have utilized a variable compression ratio mechanism (See Figs. 1, 6 and 7), to provide a current compression ratio value in the current engine operation conditions, in order to avoid the interference (See Fig. 2) between a piston (38) and an intake valve (12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the variable compression ratio mechanism, to provide a current compression ratio value in the current engine operation conditions as taught by Aoyama in the Nakamura method, since the use thereof would provide an improved engine valve control method, in order to avoid an interference between the engine valve and the piston, under various engine operating conditions.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Machida (US Patent 6,739,296).
- Aoyama et al. (US Patent 6,732,682).
- Takemura et al. (US Patent 6,615,775).
- Flynn et al. (US Patent 6,276,334).

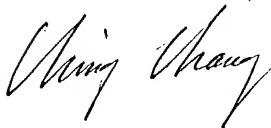
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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ching Chang whose telephone number is (703)306-3478. The examiner can normally be reached on M-Th, 7:00 AM -5:00 PM.

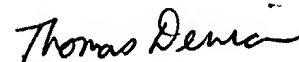
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (703)308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner



Ching Chang



THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700